UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

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)
UNITED STATES OF AMERICA,)
)
Plaintiff,)
) Civil Action No. 99-CV-02496 (GK)
v.)
) Next scheduled court appearance:
PHILIP MORRIS USA INC.,) Trial (ongoing)
f/k/a PHILIP MORRIS INC., et al.,)
)
Defendants.)
_____)

TESTIMONY OF GREGORY A. WULCHIN UNDER ORDER #471

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Q: Please state your full name for the record. 1
THE WITNESS: My name is Gregory A. Wulchin. 2
Q: What is your date of birth? 3
A: [DELETED], 1965. 4
Q: Did you receive a subpoena to appear to testify today? 5
A: Yes. 6
Q: When did you receive it? 7
A: I don't remember the precise date, but it was during the week of August 9, 2004. 8
Q: Where are you employed at present? 9
A: I work for the CIA. 10
Q: When did you begin your employment in your current position? 11
A: September 27, 2004. 12
Q: What is your educational background? 13
A: I graduated from the University of Virginia in 1986 with a B.A. in biology. 14
Q: Have you attended conferences on indoor air quality? 15
A: Yes. I attended a conference in Baltimore on indoor air quality as an employee of HBI. 16
Q: Are you a member of any organizations relating to industrial hygiene? 17
A: I joined the American Industrial Hygiene Association when I was employed by HBI, but 18
I've let my membership lapse since then as it does not relate to my current employment. 19
Q: Did you work in any employment related to indoor air quality before being hired by 20
HBI? 21
A: No. 22

_____

_____

Q: After you left HBI were you employed in any positions related to indoor air quality? 1
A: I worked for Sigal Environmental in Washington, DC, from November 1993 to 2 approximately February 1996, as a project manager on indoor air quality surveys, asbestos 3
surveys, and energy consulting work. 4
Q: When were you employed by Healthy Buildings International ("HBI")? 5
A: I was employed by HBI for over five years, from April 1988 to November 1993. 6 However, when I was first employed, the company's name was ACVA Atlantic, which was later 7
changed to Healthy Buildings International. For convenience, I will refer to the company

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as 8
"HBI" regardless of the time frame. 9
Q: What was your job title when you worked for HBI? 10
A: Field technician. 11
Q: Please describe your responsibilities as a field technician at HBI. 12
A: My primary responsibility at HBI was to inspect buildings, as a member of a two person 13
team, for indoor air quality problems. 14
Q: Mr. Wulchin, what was the nature of HBI's business when you arrived as you 15
understood it? 16
A: When I started, HBI was a company that specialized in the study and assessment of 17
indoor air quality in commercial buildings in offices and other spaces within the building
and in 18
the building ventilation system. 19
HBI installed access points in the ducts of the ventilation system of these buildings to be
20
able to inspect the ducts. HBI also sold a monitoring device called Samplaire that could
be 21
installed at the access point in the ducts. U.S. Exhibit 65101, at Exhibit A, pages 14-15
and 2, is 22

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a quote to perform an indoor air quality inspection and install Samplaires in the Imperial
Bank 1
Building in San Diego, California. U.S. 65101, at Exhibit B, is an excerpt from an inspection 2
report to the client on the inspection and installation of the Samplaires at the Imperial
Bank 3
Building. The Samplaires were small monitoring devices that were installed in the ducts at the 4
access points. A quantity of air passed through a filter capsule in the device. The filter
trapped 5
dust and other matter that flowed through it on the filter. HBI returned every approximately six 6
months to replace the filter capsules. To my knowledge, and I worked on several of these
7
subsequent inspections, the filters were rarely inspected by a laboratory. While visual inspection 8
of the ducts and testing in various rooms throughout a building are useful in evaluating
indoor air 9
quality, the filters were worthless. 10
Q: I want to talk to you about some matters that you addressed before the 11
Subcommittee on Health and the Environment. Do you remember giving a signed 12
statement to that Congressional subcommittee? 13
A: Yes. 14
Q: Mr. Wulchin, turning your attention to U.S. Exhibit 65101, do you recognize this 15
exhibit? 16
A: Yes. 17
Q: What do you recognize this U.S. Exhibit 65101 to be? 18
A: U.S. Exhibit 65101 is my statement to the Subcommittee and the field notes and other

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19
documents supporting my statement. 20
Q: Turning your attention to your field notes in U.S. Exhibit 65101, at Exhibit A, pages 21
1 to 15, which relate to your inspection of the Imperial Bank Building in San Diego, 22

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4
California, when did you inspect the Imperial Bank Building? 1
A: July 1989. 2
Q: What do your field notes reflect with regard to the indoor air quality of the Imperial 3
Bank Building at the time that you inspected in July 1989? 4
A: As my field notes in U.S. Exhibit 65101, at Exhibit A, page 11, show, one area that I 5
sampled, which is indicated at sample number 43, was a south room between suites 440 and 480 6
on the fourth floor of the building. One person was smoking in this room when I measured the 7
particulate level in the room. I recorded a particulate measurement of 150 micrograms per
cubic 8
meter (ug/m3). 9
Q: What is the significance of a particulate level of 150 micrograms per cubic meter? 10
A: A particulate level of 150 micrograms per cubic meter is particularly high level of 11
particulates. It is twice the level of 75 ug/m3, which HBI cited as the realistic upper limit
for 12
general offices areas. See U.S. Ex. 65101, at Ex. B, p.5. 13
Q: Upon completion of your inspection of the Imperial Bank Building, what did you do 14
with these field notes? 15
A: I put my field notes in a file folder for final report writing by HBI's report writers, 16
including Gray Robertson, the HBI President, and Peter Binnie. 17
Q: Are your field notes relating to the Imperial Bank Building in the same condition in 18
U.S. Exhibit 65101, as they were when you submitted them to the file folder for report 19
writing? 20
A: No. After I submitted the field notes the particulate measurement I recorded in sample
43 21
was changed. Additionally, there are handwritten notes that I recognize to be written by
Mr. 22

Robertson. 1
Q: Mr. Wulchin, what was specifically altered in your field notes? 2
A: As shown in U.S. Exhibit 65101, at Exhibit A, page 11, the number "150" in the field 3
notes was struck out, and the number "75" was inserted into my field notes. Handwritten notes, 4
which were not written by me, appear in U.S. Exhibit 65101, at Exhibit 1, page 12, 'Mark

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up 5
everything by "10."' Those notes were written in the column where the piezobalance 6
measurements were recorded and where the measurements of samples 49, 50, and 51
were 7
recorded. There are additional handwritten notes in the column where the carbon
monoxide 8
measurements were recorded, and those notes appear to say 'decrease "1" from
everything.' 9
Q: Addressing the first alteration you list, what is the significance of altering the
10
recorded data in your field notes? 11
A: Reducing the particulate reading shows particulate levels that are not as high as I
recorded 12
and suggests that smoking did not elevate the particulate levels as much as I actually
recorded. 13
Q: Was the measurement of 150 micrograms per cubic meter an accurate measure
of 14
the particulate level of the room in sample 43 of the Imperial Bank Building? 15
A: Yes. 150 ug/m3 was an accurate measurement of the particulate level in the room. 16
Q: Did anyone contact you about changing the measurement from "150" to "75"?
17
A: No. 18
Q: Had you been asked about the accuracy of this measurement at the time, what 19
would you have answered? 20
A: If anyone had asked, I would have answered that the measurement of "150" was
accurate 21
and representative, not abnormal or unrepresentative. 22

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Q: Going back to the handwritten notes in U.S. Exhibit 65101, at Exhibit A, page 12,
do 1
you recognize the handwriting? 2
A: I recognize that to be Mr. Robertson's handwriting. 3
Q. Were the piezobalance measurements you recorded in U.S. Exhibit 65101, at
Exhibit 4
A, page 12 actually increased by 10 ug/m3 by HBI? 5
A. Yes. As shown in U.S. Exhibit 65101, at Exhibit A, page 12, every piezo measurement
6
was changed by HBI in its final report on the Imperial Bank Building study and
increased
by 10 7
ug/m3. 8
Q: Was the Imperial Bank Building data the only instance in which you believe that
9
HBI altered the results of your field measurements? 10
A: No. There were other instances in which HBI reduced field measurements of high
levels 11
of particulate in rooms where smoking occurred. 12
Q: Mr. Wulchin, do you recognize U.S. Exhibit 65097? 13
A: Yes. 14
Q: What is U.S. Exhibit 65097? 15
A: U.S. Exhibit 65097 is the report that HBI submitted in January 1990 to the Center
for
16
Indoor Air Research (CIAR), entitled "Measurements of Environmental Tobacco Smoke
in 17
General Office Areas." 18
Q: What does the report reflected in U.S. Exhibit 65097 address? 19
A: The report in U.S. Exhibit 65097 summarizes the results of field tests for
environmental 20

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tobacco smoke conducted by HBI. 21
Q: Do you have any personal knowledge of the tests summarized in this report? 22

A: Yes. I conducted a number of the tests summarized in the report. 1
Q: Let's look at U.S. Exhibit 65101, at Exhibit I, page 1. Please explain to the Court 2
what is found there. 3
A. That exhibit is from an inspection I performed. As indicated in the exhibit, I recorded 4
that four cigarettes were smoked in the portion of the office that I inspected. Nevertheless, the 5
particulate monitoring device, called a piezoelectric microbalance (piezobalance), registered ten 6
entries of "0.0," meaning that it recorded no particulates in the air during the course of the 7
hour-long inspection. 8
Q: Is that unusual? 9
A: It is highly unlikely that there was no particulates in the air. Even air that is not 10
contaminated with environmental tobacco smoke normally contains a measurable quantity of 11
particulates. The likely explanation for the result was that the piezobalance was malfunctioning. 12
This happened on other occasions while I was working at HBI. 13
Q: If the piezobalance was malfunctioning, should you have submitted the results of 14
that test in your report to HBI? 15
A: Yes. The ordinary practice at HBI was to let the HBI report writers, such as Gray 16
Robertson, determine whether to use the results of the measurements that were collected in the 17
field, or whether to send the field inspector back for additional measurements. 18
Q: Was the information that you recorded altered in U.S. Exhibit 65097? 19
A: Yes. U.S. Exhibit 65097, at Exhibit 6, page 18, entry 12 (page 16 of the table appended 20
to the report)) shows the results of my August 8, 1989 inspection in the HBI report, but 21
the average particulate measurement that I recorded is altered. The average "RSP" (respirable 22

suspended particulate) measurement in the report is 10 micrograms per cubic meter (ug/m3) – 1
not 0.0 ug/m3 as recorded in my notes, U.S. Exhibit 65101, at Exhibit I, page 1. 2
Q: Do you believe that this alteration was justified? 3
A: No, it was not. The piezobalance was either working properly or was not working 4
properly. If it was working properly, the correct particulate level would be 0.0 ug/m3. If 5
the piezobalance was malfunctioning, as was probably the case, the measurement was not 6
representative and should have been discarded. There is no reasonable justification for simply 7
making up a new measurement as HBI did in this case. 8

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Q: What is U.S. Exhibit 65106? 9
A: This is a letter dated December 19, 1994, from TSI Incorporated Particle Instruments 10
Division to Representative Henry A. Waxman. 11
Q: Does TSI manufacture the Piezobalance that was used to take particle 12
measurements in the field for the HBI study? 13
A: Yes. 14
Q: Do you agree with the statement in U.S. Exhibit 65106 that "[i]t is highly unlikely 15
that a Piezobalance that is operating properly will measure zero at any time in a normal 16
office environment"? 17
A: Yes. 18
Q: Do you agree with the statement in U.S. Exhibit 65106 that "[t]he probability of 10 19
zero measurements at a single location is very highly unlikely"? 20
A: Yes. 21
Q: Mr. Wulchin, turning your attention to the HBI report, U.S. Exhibit 65097, at 22

Exhibit 6, page 18, entries 19-20, and at Exhibit 6, page 10, entries 11-12, are there 1
alterations in those designations based on your review of your field reports in U.S. Exhibit 2
65101, at Exhibit E, pages 4-9? 3
A: Yes. From review of the HBI report and my field notes in the areas that you indicate,
it is 4
clear to me that the particulate levels that I recorded in the field were altered by HBI
during the 5
preparation of HBI's report to CIAR, U.S. Exhibit 65097. 6
My field notes show, U.S. Exhibit 65101, at Exhibit 5, page 4, that I inspected a law 7
office and a brokerage firm on August 10, 1989. I recorded an average of 4.0 and 2.0 ug/m3 of 8
particulates respectively for those areas. However, in the corresponding report from HBI
to 9
CIAR, U.S. Exhibit 65097, at Exhibit 6, page 18, entries 19-20, those measurements are reported 10
as 40 and 20 ug/m3 respectively. 11
Similarly, my field notes, U.S. Exhibit 65101, at Exhibit E, page 7, show that I inspected
12
a transportation office and an iron and steel office on January 13, 1989. I recorded an average of 13
0.0 and 7.0 ug/m3 of particulates respectively. However, in the corresponding HBI report
to 14
CIAR, U.S. Exhibit 65097, at Exhibit 6, page 18, entries 11-12, those measurements appear as 10 15
and 17 ug/m3 respectively. 16
Q. What is the impact of these changes? 17
A. Overall, changing values and misreporting data throws the entire study's validity into
18
question. In the examples that I address above, many of the measurements that contributed to the 19
lower averages were 0.0 ug/m3, which puts the results of the inspection in question, as the 20

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piezobalance was likely malfunctioning. 21
Q: Please describe the piezobalance measurement of indoor air particulates to the
22

Court . 1
A: A piezobalance measures the weight of particulates in the air in micrograms per
cubic
2
meter (ug/m3). 3
Q: Is there another device that can be used to measure indoor air particulate? 4
A: Yes, a particulate counter can be used. 5
Q: Please describe the particulate counter device. 6
A: A particulate counter counts the number of particles of a certain size range in a
known
7
volume of air. 8
Q: Did HBI inspectors use particulate counters as well as a piezobalance in ETS 9
studies? 10
A: Generally no. HBI staff were instructed to use piezobalance in ETS studies. A 11
particulate counter was sometimes used when the piezobalance malfunctioned or was
unavailable 12
for use. 13
Q: Can the data obtained from these methods be converted from one to the other?
14
A: I know of no way to reliably convert data between these two types of measurements.
15
Q: Based on your review of the your field notes in U.S. Exhibit 65101 and the HBI
16
report to CIAR, U.S. Exhibit 65097, were particulate counts sometimes taken in lieu
of 17
piezo readings? 18
A: Yes. My review of HBI's ETS test forms indicates that on certain occasions,
particulate 19
counts were taken instead of piezo readings. Two examples are in U.S. Exhibit 65101, at
Exhibit 20
F, page 1 and page 4. What I find surprising about these examples is that in the HBI
report, the 21
company reported the particulate level in micrograms per cubic meter (ug/m3), as if a
22

piezobalance and not a particulate counter had been used. See U.S. Exhibit 65097, at
Exhibit 6, 1
page 15, entries 5-6 and entries 27-28. Based on my understanding from my training and
2
experience, it is inappropriate to substitute piezobalance readings for particulate
counts. 3
Q: Turning your attention to the HBI Report to CIAR, U.S. Exhibit 65097, at
Exhibit 6, 4
page 20, entries 39-40, based on your review of your field notes in U.S. Exhibit
65101, is 5
there a mischaracterization of your inspection? 6
A: Yes. Reviewing these exhibits, I see that on September 20, 1989, I inspected a
hospital
7
cafeteria in Jacksonville, Florida. A copy of the ETS test form that I submitted to HBI
is

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8
contained in U.S. Exhibit 65101, at Exhibit G, page 1. I tested for particulate levels in
both the 9
smoking section and the nonsmoking section of the cafeteria at the same time. During the
test 10
period, 18 cigarettes were smoked in the cafeteria. Not surprisingly, I recorded high levels of 11
particulates in both sections of the room (an average of 168 ug/m3 in the smoking section
and 12
116 ug/m3 in the nonsmoking section). These results indicated that in this case, the simple 13
physical separation of smokers and nonsmokers in the same room was not an effective strategy 14
for control of environmental tobacco smoke. 15
In the HBI report to CIAR, however, the two tests I conducted in the same room are listed 16
and tabulated as if they were inspections conducted in separate rooms. See U.S. Exhibit 65097, 17
at Exhibit 6, page 20, entries 39-40. The HBI report to CIAR treats the data like its from
two 18
separate rooms, rather than one large room with no division between the smoking and 19
nonsmoking sections. In my training and experience, this is a mischaracterization. The cafeteria 20
was not a nonsmoking room. To the contrary, many cigarettes were smoked in the room during 21
the test of the nonsmoking section. It is a mischaracterization to treat the nonsmoking section of 22

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a room with heavy smoking as a room in which no smoking is occurring. 1
Q: What is the significance of this mischaracterization? 2
A: The result of HBI's mischaracterization was to skew the results of its analysis. Treating a 3
section of a smoking room as a nonsmoking room raises the average particulate level of the 4
nonsmoking room, obscuring the differences between smoking and nonsmoking areas. 5
Q: Based on your review of your field notes in U.S. Exhibit 65101 and the HBI report 6
to CIAR in 65097, are there instances where HBI recorded a smaller local area and not the 7
size of the entire room? 8
A: Yes. Reviewing my field notes in U.S. Exhibit 65101, at Exhibit H, page 1, I see that
on 9
August 14, 1989, I inspected an office in Richmond, Virginia. This office had an area of
1000 10
square feet. The local area of the test, which is the area in which I would count the number of 11
cigarettes smoked, was 300 square feet. There were no partitions dividing the local test
area 12
from the larger office. Air could circulate freely from the local test area to the larger
office. 13
However, in the report to CIAR, U.S. Exhibit 65097, at Exhibit 6, page 18, entry 26, the

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room 14
size is reported as 300 square feet, the size of the local test area, yet the room, as shown
in my 15
field notes, was actually 1000 square feet. My review and comparison of these exhibits also 16
shows that there were numerous other instances where room sizes were erroneously 17
underreported in summarizing the inspections I conducted. Compare U.S. Exhibit 65101, at 18
Exhibit I, page 1 (room size recorded as 1500 square feet), with U.S. Exhibit 65097, at Exhibit 6, 19
page 18, entry 12 (room size reported as 375 square feet); U.S. Exhibit 65101, at Exhibit
I, page 20
4 (room size recorded as 1500 square feet), with U.S. Exhibit 65097, at Exhibit 6, at page
10, 21
entry 26 (room size reported as 600 square feet); U.S. Exhibit 65101, at Exhibit I, page 7
(room 22

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size recorded as 1800 square feet), with U.S. Exhibit 65097, at Exhibit 6, page 10, entry
30 1
(room size reported as 252 square feet); U.S. Exhibit 65101, at Exhibit I, page 10 (room
size 2
recorded as 1920 square feet), with U.S. Exhibit 65097, at Exhibit 6, page 11, entry 4 (room size 3
reported as 288 square feet). 4
Q: What is the significance of HBI's use of the smaller room sizes in the HBI report to 5
CIAR, U.S. Exhibit 65097? 6
A: Reporting the smaller local area in a partitioned larger room and not the size of the
entire 7
room raises the smoker density level, while RSP and nicotine levels may be reduced by the larger 8
volume of air that freely circulates in the larger room. Smoker density is discussed in the
HBI 9
report to CIAR, U.S. Exhibit 65097, at Exhibit 6, page 6 in the second paragraph. It is a
key 10
input in HBI's statistical model, and HBI defines "smoker density" as the number of cigarettes 11
smoked per hour per unit of office area. 12
Q: What are U.S. Exhibits 65103 and 65104? 13
A: These exhibits are field inspection data that were provided by HBI to the House 14
Subcommittee during its investigation. 15
Q: Are these field inspection data addressed in the HBI report to CIAR, U.S. Exhibit 16
65097? 17
A: Yes. 18
Q: Were field inspection data like that found in U.S. Exhibits 65103 and 65104, 19
prepared at or near the time that inspections were made by HBI by a person with 20
knowledge of the data as part of a regularly conducted business activity and routinely 21
maintained by HBI as a business record? 22

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A: Yes. 1
Q: Based on your review of U.S. Exhibits 65103 and 65097, are there any peculiarities 2
in that would cause you concern regarding the accuracy of the HBI report to CIAR in U.S. 3
Exhibit 65097? 4
A: Yes. The inspector clearly writes, "Did not have Piezobalance on site." So no 5
measurement of respirable suspended particles (RSP) could be recorded for the smoking and 6
nonsmoking sections of the bank's cafeteria. However, later in HBI's report to CIAR, U.S. 7
Exhibit 65097, at Exhibit 6, page 26, entries 33-34, the corresponding data show levels of
30 and 8
20 ug/m3 RSP for the smoking and nonsmoking sections of the cafeteria. There appears to be no 9
basis for these numbers. 10
Q: After reviewing U.S. Exhibit 65104 and U.S. Exhibit 65097, do you have any 11
concerns about the data reported in U.S. Exhibit 65097? 12
A: Yes. Similar to the exhibit addressed above, on the data sheet contained in U.S. Exhibit 13
65104, the notation appears as "PIEZO ON THE FRITZ!!" However in the HBI report to CIAR, 14
U.S. Exhibit 65097, at Exhibit 6, page 15, entries 17-18, the counterpart data show levels
of 30 15
and 10 ug/m3 RSP respectively for the lunch room and computer room of the bank. Again, there 16
appears to be no basis for these numbers. 17
Q: Mr. Wulchin, turning your attention to U.S. Exhibit 65107, do you recognize that 18
document? 19
A: Yes. 20
Q: Please describe U.S. Exhibit 65107 to the Court. 21
A: U.S. Exhibit 65107 is a collection of field notes drafted by various HBI technicians,
22

including myself. 1
Q: Were field inspection data like that found in U.S. Exhibit 65107 prepared at or near 2
the time that inspections were made by HBI by a person with knowledge of the data as part 3
of a regularly conducted business activity and routinely maintained by HBI as a business 4
record? 5
A: Yes. 6
Q: After reviewing U.S. Exhibit 65107 and U.S. Exhibit 65097, do you have any 7
concerns regarding the data reported in the HBI report to CIAR? 8
A: Yes. 9
Q: What are those concerns? 10
A: As with the exhibits that I addressed above, the data in U.S. Exhibit 65107 contains 11
numerous discrepancies between the data sheets and summary report by HBI to CIAR,

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U.S. 12
Exhibit 65097. First, piezobalance readings as they were recorded in the data sheets were
altered 13
in the HBI report to CIAR. For example, on page 5 of U.S. Exhibit 65107, the piezobalance RSP 14
data show individual data points and averages for two sets of measurements all equal zero
for 15
500 square feet and 2000 square feet computer areas in a bank with one and three cigarettes 16
smoked respectively. However, in the HBI report to CIAR, U.S. Exhibit 65097, at Exhibit 6, 17
page 19, entries 25 and 26, the corresponding data for a large office area and computer office 18
area both are reported as having 20 ug/m3 RSP levels. Similarly, U.S. Exhibit 65107, at page 4, 19
shows that in September 1989, the piezobalance RSP data show individual data points and 20
averages for two sets of measurements all equal zero for two 500 square feet areas with one 21
cigarette smoked in each. In the HBI report to CIAR, U.S. Exhibit 65097, at Exhibit 6, page 19, 22

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entries 23 and 24, the corresponding data reported those office areas as both having 10 ug/m3 1
RSP levels. Additionally, on page 3 of U.S. Exhibit 65107, the piezobalance RSP data show 2
individual data points and averages for two sets of measurements all equal to zero for a
400 3
square feet and a 1000 square feet computer area with zero and one cigarettes smoked 4
respectively. This contrasts from the HBI report to CIAR, U.S. Exhibit 65097, at Exhibit
6, page 5
19, entries 21 and 22, where the corresponding data reported the large office area and computer 6
office areas as having 10 and 12 ug/m3 RSP levels respectively. 7
Second, as I stated earlier, the occurrence of zeroes in piezobalance RSP readings can 8
occur for two reasons 1) the piezobalance is malfunctioning, or 2) the air is very clean. It
is 9
highly unlikely in a typical office in the absence of smoking and virtually impossible in
the 10
presence of smoking to record multiple zero particulate measurements in a row on a properly 11
functioning piezobalance. On numerous instances, on HBI's data sheets in U.S. Exhibit 65107, 12
multiple piezobalance readings in a row were recorded as "0" on the data sheets, see pages 2 13
through 6 of U.S. Exhibit 65107. 14
Q: During your tenure at HBI, what was that organization's position with respect to 15
environmental tobacco smoke? 16
A: HBI took the position that environmental tobacco smoke problems can be eliminated with 17
good ventilation practices. 18

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Q: Do you agree with HBI's position that good ventilation practices can eliminate 19
indoor air quality problems that result from environmental tobacco smoke? 20
A: No. HBI's position is not supported by many of the inspections that I conducted for
HBI. 21
In many instances, I recorded high levels of particulates from cigarettes in rooms with
good 22

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ventilation and low levels of carbon dioxide. The level of carbon dioxide is a common
measure 1
of the adequacy of ventilation. The results of an inspection that I conducted in
Richmond,
2
Virginia, on August 14, 1989, is a good example of this situation. A copy of the ETS
test
that I 3
conducted is contained in U.S. Exhibit 65101, at Exhibit K, page 1. As shown in that
instance, 4
the smoking of two cigarettes in a 440 square foot office raised the particulate level
to an
average 5
of 140 ug/m3, which is well above HBI's standard of 75 ug/m3. This elevated level
occurred 6
despite the presence of good ventilation and a low carbon dioxide concentration of 570
parts per 7
million. 8
Q: Mr. Wulchin, based on your training and experience as an employee of HBI and
9
your review of HBI documents, what is your view of the data that HBI collected
from 10
buildings? 11
A: My experience with HBI data, as well as my review of HBI reports, leads me to
conclude 12
that HBI's data contain unexplained entries that raise serious questions about the
integrity
of its 13
studies. 14
Q: Thank you Mr. Wulchin. 15

http://legacy.library.ucsf.edu/tid/qgq07a00/pdf
Stanford http://tobaccodocuments.ucsf.edu/docs/jrfl0001